SECTION 757

IRRIGATION SYSTEM MATERIALS

757.1 GENERAL:

All materials and fittings shall be new, of the manufacturer's most current design, and shall bear the appropriate National Association seal of approval for example, NSF, UL, etc. Similar units shall be procured from the same manufacturer and internal parts shall be common and interchangeable. Parts listing and source of supply for replacement parts will be furnished to the Engineer.

757.2 PIPE AND FITTINGS:

The type of pipe material and fittings shall be as designated on the plans or in the special provisions. The type utilized shall comply with one of the following:

757.2.1 Steel Pipe: All steel pipes shall be newly galvanized, standard weight, Schedule 40 conforming to Section 753.

757.2.2 Plastic Pipe: Plastic pipe shall be rigid, unplasticized polyvinyl chloride, PVC 1120 or 1220, with an SDR of 26 or less, complying with ASTM D1785. Schedule 40 or 315 psi pipe shall be used for the continuously pressurized run on the supply side of Control Valves. PVC 1120 to 1220, SDR 26, pressure rated at not less than 125 psi shall be used on the discharge side of all control valves.

757.2.3 Pipe Fittings and Couplings:

(A) Steel Pipe Fitting and Couplings – Steel pipe fittings and couplings shall be galvanized, malleable iron, screwed fittings or couplings, conforming to Section 753.

(B) Plastic Pipe Fittings, unions, adaptors, and Couplings – Plastic pipe fittings and couplings shall be either threaded type or slip fitting tapered socket solvent weld type. Schedule 80 pipe only will be used for threaded joints. Tapered solvent weld fittings may be either Schedule 80 or Schedule 40, but in any case, will be equal to or greater than the Schedule and Pressure Rating of the plastic pipe being joined. Tapered fittings shall be sized so that a dry, unsoftened taper cannot be inserted more than halfway into the socket. Plastic saddles and flange fittings are not permitted.

(C) Copper Pipe Fittings and Couplings – Copper pipe fittings, unions, adaptors, and couplings shall

757.2.4 Solvent Cement: The solvent cement shall be a solution of Type 1, Grade 1, unplasticized, polyvinyl chloride molding or extrusion compound as specified in ASTM D1784, or an equivalent PVC resin. The cement shall be free flowing and shall not contain lumps, microscopic undissolved particles or any foreign matter that will adversely affect the ultimate joint strength. It shall show no stratification or separation that cannot be removed by stirring. Container labeling shall be in accordance with ASTM D2564. – NEED TO ADD PRIMER AS A MATERIAL DESCRIBED – SUGGGEST USING 757.2.5

757.3 VALVES AND VALVE BOXES:

757.3.1 General: Valves shall be of the size, type, and capacity designated on the plans or in the special provisions and shall comply with the requirements specified herein.

All valves shall be capable of satisfactory performance at a working pressure of 200 psi. Valves shall be designed to permit disassembly to replace sealing components without removal of the valve body from the pipeline.

757.3.2 Gate Valves: Gate valves in size two inches and smaller shall be all bronze double disc wedge type with integral taper seats and non-rising stem. Sizes two and one-half inches and larger shall be iron body, brass trimmed, with the other features the same as for the two inch. Section 753 applies.

757.3.3 Isolation Control Valves: Manual control valves shall be PVC, brass or bronze as indicated on plans, and shall be straight or angle pattern glove valves, full opening; key operated with replaceable compression disc and ground joint union

Commented [TK(1]: 757.3.4 Electrical Remote Control Valves:

A. Remote control valves shall be electrically operated, designed for a 24 volt, 60- cycle system. They shall be brass, bronze or plastic with accurately machined valve seat surfaces, equipped for flow control adjustment, and with the capability for manual operation. They shall be readily disassembled for repair and the internal parts shall be easily accessible for service even when installed in the line. The internal valve shall be a normally closed, diaphragm type with slow opening and closing action as protection against surge pressures. Actuation shall be by an encapsulated type solenoid with the solenoid shunt band, tube, and plunger of stainless steel for corrosion protection. A removable and cleanable strainer shall be provided at the control chamber inlet to prevent debris from entering the solenoid operating section.

B. Remote control valves shall be electrically operated, designed for a 9-12-volt DC system. They shall be brass, bronze or plastic with accurately machined valve seat surfaces, equipped for flow control adjustment, and with the capability for manual operation. They shall be readily disassembled for repair and the internal parts shall be easily accessible for service even when installed in the line. The internal valve shall be a normally closed, diaphragm type with slow opening and closing action as protection against surge pressures. Actuation shall be by an encapsulated type DC Latching Solenoid with the solenoid shunt band, tube, and plunger of stainless steel for corrosion protection. A removable and cleanable strainer shall be provided at the control chamber inlet to prevent debris from entering the solenoid operating section

757.6.3 Controller Unit:

A. The controller unit shall be fully automatic, with provisions for manual operation, sized to accommodate the number of stations or control valves included in the system and designated on the plans or in the special provisions. Outdoor models shall be housed in a vandal-resistant, weatherproof enclosure that has a locking cover. The unit shall require a standard 117 volt, 60 cycle input and provide a 26.5 volt, 60 cycle output and shall incorporate a 14-day programming capacity. The unit shall have a "Master On-Off" switch which will deactivate the controller but allow the day and hour clocks to continue operation. In addition, it shall include a resettable circuit breaker for unit protection. Each station timing dial shall have an "Omit" or "Off" position and incremental dial settings for timing controls up to 30 minutes.

B. The controller unit shall be fully automatic, with provisions for manual operation, sized to accommodate the number of stations or control valves included in the system and designated on the plans or in the special provisions. Outdoor models shall be housed in a vandal-resistant, weatherproof enclosure that has a locking cover. The unit may be either of an alternate power source of either battery operated or solar operated 9-12-volt systems when circumstance dictates and shall incorporate a 14-day programming capacity. The unit shall have a "Master On-Off" switch which will deactivate the controller but allow the day and hour clocks to continue operation and be located in a close enough proximity to the control valves for proper operation per manufacturer's specifications.

757.3.4 Electrical Remote-Control Valves: Remote control valves shall be electrically operated, designed for a 24 volt, 60-cycle system. They shall be PVC, brass or bronze as indicated on plans with accurately machined valve seat surfaces, equipped for flow control adjustment, and with the capability for manual operation. They shall be readily disassembled for repair and the internal parts shall be easily accessible for service even when installed in the line.

The internal valve shall be a normally closed, diaphragm type with slow opening and closing action as protection against surge pressures. Actuation shall be by an encapsulated type of solenoid with the solenoid shunt band, tube, and plunger of stainless steel for corrosion protection. A removable and cleanable strainer shall be provided at the control chamber inlet to prevent debris from entering the solenoid operating section.

757.3.6 Quick-Coupling Valves and Assemblies: Quick-coupling valves shall be brass or bronze with built-in flow control and self-closing valve and supplied in 3/4-inch size unless otherwise indicated on plans. When a quick-coupler assembly is specified, it shall consist of the valve, quick-coupler connection and hose swivel. Keys and hose swivel ells shall be furnished as specified on the plans.

757.3.7 Valve Boxes: Valve boxes with locking covers shall be molded, non-corrosive plastic. Applicable ASTM references: D638. – NEED TO ADD MATERAIL DESCRIPTION FOR PRESSURE REGULATORS, WYE STRAINER, WIRE CONNECTORSMASTER VALVES, FLOW SENSOR, SENSING EQUIPMENT, COMMUNICATION EQUIPMENT, AND SUPPORT MATERAILS LIKE BRICK STABILZIERS, AGGREGATE SUMP, AND FILTER FABRIC.

757.4 BACKFLOW PREVENTER ASSEMBLY:

The backflow preventer assembly shall consist of pressure type or reduced pressure type backflow preventer unit and associated components conforming to the governing code requirements and as shown on the plans. It shall be equal in quality and performance to a "Foundation for Cross-Connection Control and Hydraulic Research."

757.5 IRRIGATION SYSTEM EQUIPMENT

Pop-Up Rotors / Spray heads, bubbler heads and spray nozzles shall be of the types and sizes as shown on the plans. All major components shall be brass, bronze, stainless steel, or high impact plastic.

Equipment of one type with similar flow characteristics shall be from the same manufacturer and shall bear the manufacturer's name and identification code in a position where they can be identified after installation.

Fixed head Rotors and Spray Heads shall have a one-piece housing with provisions for interior parts replacement. Pop-up sprinklers shall be designed to rise at least 2 inches during operation. Full or part circle sprinklers shall be interchangeable in the same housing.

Bubbler heads shall be of corrosion-resistant, durable bodies, injection molded out of cycolac, and tapped for 1/2-inch I.P.S. threads. The bubbler shall be fully adjustable from 0 to 5 gallons per minute and shall have a minimum discharge of 1.7 gallons per minute under pressure of 15 pounds per square inch and a minimum discharge of 2.4 gallons per minute under pressure of 30 pounds per square inch supplied at the head.

757.6 ELECTRICAL MATERIAL:

All equipment and material shall comply with the requirements of the governing code and shall be listed by Underwriters' Laboratories, Inc.

757.6.1 Conduit: Conduit shall be galvanized steel conforming to Section 753.

757.6.2 Conductors: Service line conductors shall be supplied in the size shown on the plans and shall be THW 600 volts insulation rating conforming to ASTM D2219 or D2220. Low voltage control conductors shall be Type UF No. 14 AWG copper unless otherwise shown on the plan and shall be UL approved for direct burial installation.

757.6.3 Controller Unit: The controller unit shall be fully automatic, with provisions for manual operation, sized to accommodate the number of stations or control valves included in the system and designated on the plans or in the special provisions. Outdoor models shall be housed in a vandal-resistant, weatherproof enclosure that has a locking cover. The unit shall require a standard 117-volt, 60 cycle input and provide a 26.5-volt, 60 cycle output and shall incorporate a 14-day programming capacity. The unit shall have a "Master On-Off" switch which will deactivate the controller but allow the day and hour clocks to continue operation.

In addition, it shall include a resettable circuit breaker for unit protection.

Each station timing dial shall have an "Omit" or "Off" position and incremental dial settings for timing controls up to 30 minutes.

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